

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-358131

(43)Date of publication of application : 26.12.2000

(51)Int.Cl.

H04N 1/04
G03B 27/34
G03G 21/00

(21)Application number : 11-169405

(71)Applicant : SHARP CORP

(22)Date of filing : 16.06.1999

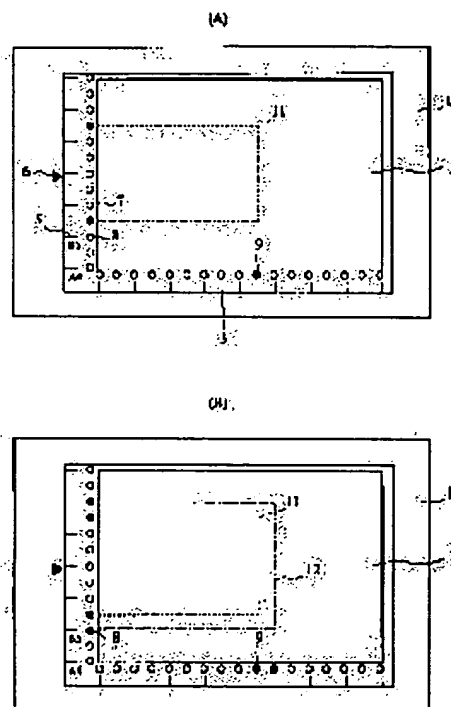
(72)Inventor : KO HIDEYUKI

(54) IMAGE READER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an image reader by which a user can easily recognize a print area by displaying a printable area on the basis of a recording paper size and magnification around the original placing area of the image reader and at the surrounding of the original placing area.

SOLUTION: When a user uses an operation section to enter desired magnification and a recording paper size in this image reader, LEDs 8, 9 being a plurality of light emitting means arranged at a prescribed interval in an original positioning member 3 of an original platen in the main scanning direction and in the sub-scanning direction are used to display a printable area 11 and a print margin 12. In this case, LEDs showing the respective ends of the printable area 11 are turned on in the main scanning direction and LEDs indicating the respective ends of the printable area 11 measured from a reference line are turned on in the sub-scanning direction. LEDs showing the print margin 12 are turned on at respective ends at the outside of the LEDs showing the printable area 11.



LEGAL STATUS

[Date of request for examination]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The image reader which reads the image of the manuscript which laid in a manuscript base, and will be characterize by to have a display means display the field which can print on a record form among the manuscript installation fields on a manuscript base according to them, and which can be print on the inside of a manuscript installation field, or its perimeter in the image reader which outputs the image which read as print data of size according to a printing scale factor if a record paper size and a printing scale factor are input.

[Claim 2] Said display means is an image reader according to claim 1 characterized by displaying a printing margin on the inside of a manuscript installation field, or its perimeter with the field which can be printed.

[Claim 3] Said display means is an image reader according to claim 1 or 2 characterized by being a luminescence means to have two or more displays prepared in the perimeter of said manuscript installation field in the main scanning direction and the direction of vertical scanning.

[Claim 4] Said display means is an image reader according to claim 1 or 2 characterized by including the display material prepared in the top face of a luminescence means to have two or more displays prepared in the main scanning direction around said manuscript base installation field, and a manuscript scan means to move in the direction of vertical scanning on the manuscript base underside.

[Claim 5] Said display means is an image reader according to claim 1 or 2 characterized by including a luminescence means to have two or more displays prepared in the top face of a manuscript scan means in the main scanning direction.

[Claim 6] Said luminescence means is an image reader according to claim 5 characterized by being the light source which irradiates the reading light for reading the image of a manuscript.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to image readers, such as a copying machine and a scanner, especially the image reader which has a variable power function.

[0002]

[Description of the Prior Art] There is a variable-power function which expands or reduces the size of the read manuscript to the function which image readers, such as equipment which outputs reading data to other devices which read the image of a manuscript like [in the scanner section] the equipment which prints the image which read the image of a manuscript and was read, and a scanner, and were connected, have like image-formation equipments, such as a copying machine. There are an automatic variable power function and a manual variable power function as variable power function. If an automatic variable power function inputs into a control unit the size of the record form which prints the image read in the manuscript and a manuscript is laid in a manuscript base, it will read the size of a manuscript, will compute a printing scale factor automatically, and will print it in a record form. A user inputs a desired record paper size and a desired printing scale factor into a control unit manually, and prints a manual variable power function in a record form.

[0003] Drawing 10 is the example of the plan of the manuscript base in the scanner section of the conventional copying machine. When using a copying machine, a manuscript is laid on the platen glass 2 of the manuscript base 1 according to the manuscript positioning member 3. The scale 5 in which the installation location of the main scanning direction of a manuscript and the direction of vertical scanning is shown, and the center mark 6 which shows the main installation location of a manuscript are displayed on the manuscript positioning member 3.

[0004] At the time of a manual variable power function, the image size of the manuscript which can be printed on a record form becomes settled with the inputted record paper size and a printing scale factor. In connection with this, the field which is the range printed by the record form and which can be printed becomes settled in the manuscript installation field on the manuscript base 1, and the image of the manuscript outside [which can be printed / this] a field is not printed on a record form. Therefore, the manuscript image which should be printed on a record form needs to lay a manuscript on the manuscript base 1 so that it may be located in [which can be printed] a field.

[0005]

[Problem(s) to be Solved by the Invention] However, although the proper installation location of the paper size in the case of reading a manuscript by actual size is displayed with the scale 5 in the conventional image reader, there is no display of the location in which a manuscript is laid according to the scale factor and record paper size which he wishes at the time of variable power. For this reason, when a user uses a manual variable power function, it is not clear to which field a manuscript can be printed. Therefore, after inputting a record paper size and a printing scale factor, the user has discerned subjectively the location according to the set-up scale factor of choice, laid the manuscript, the manuscript was made to read with an image reader, and the record form was made to print.

[0006] Although it was good when the image of a manuscript was printed by the location of choice of a record form, when it was printed by different location from the location of choice, or some images suffered a loss and it was printed by the above-mentioned approach, the location which lays a manuscript in a manuscript base needed to be moved and re-printed, and there was a case where a record form became useless.

[0007] Moreover, there is also the approach of solving the problem of a manuscript installation field because input numerically the field specified on the manuscript and it carries out automatic variable power with a manuscript block-definition means as indicated by JP,7-110639,A. However, if such an approach is used, the need for the software which performs complicated processing, and the increment in the components accompanying it are caused, and it is unsuitable to a general aviation.

[0008] If a manuscript is laid in the field which can be printed where the field in the manuscript installation field which becomes settled with a record paper size and a printing scale factor which can be printed is got to know beforehand when specifying a record paper size and a printing scale factor, carrying out variable power of the manuscript and printing it, it will become possible to omit useless printing.

[0009] Then, this invention aims at offering the image reader with which a user can recognize easily the field which can be printed by displaying the field based on a printing record paper size and a printing scale factor which can be printed on the manuscript installation field of an image reader, and its perimeter.

[0010]

[Means for Solving the Problem] This invention is equipped with the following configurations as above-mentioned The means for solving a technical problem.

[0011] (1) The image of the manuscript which laid in a manuscript base read , and if a record paper size and a printing scale factor be input , it will be characterize by to have a display means display the field which can print on a record form among the manuscript installation fields on a manuscript base according to them and which can be print on the inside of a manuscript installation field , or its perimeter in the image reader which output the image which read as print data of size according to a printing scale factor .

[0012] In this configuration, it has a means to display the field which can be printed on the manuscript installation field of the manuscript base of an image reader, or its perimeter. Therefore, the display by the display means is seen, a user can grasp easily in which field of an installation base a manuscript should be laid, especially at the time of variable power, since the troublesome activity that a user judges like before the field which can be printed becomes unnecessary, he can exclude futility, such as trial printing, and printing effectiveness improves.

[0013] (2) Said display means is characterized by displaying a printing margin on the inside of a manuscript installation field, or its perimeter with the field which can be printed.

[0014] In this configuration, the display means formed in the manuscript installation field on a manuscript base or its perimeter displays the installation field and printing margin which can be printed. Therefore, since the information on the printing margin which is a margin can be known in addition to the exact range for printing on a record form, manuscript reading can be performed, checking a printing layout. Here, a printing margin is a field which is produced around the field which can be printed and which becomes a margin in principle on a record form, and it cannot guarantee whether the image laid in this field can be printed.

[0015] (3) Said display means is characterized by being a luminescence means to have two or more displays prepared in the perimeter of said manuscript installation field in the main scanning direction and the direction of vertical scanning.

[0016] In this configuration, the field which can be printed is displayed with a luminescence means to have two or more displays prepared in the main scanning direction and the direction of vertical scanning of a manuscript base. Therefore, a user can recognize exactly the field of a manuscript which can be printed by seeing luminescence of a luminescence means.

[0017] (4) Said display means is characterized by including the display material prepared in the top face

of a luminescence means to have two or more displays prepared in the main scanning direction around said manuscript base installation field, and the manuscript scan means which carries out vertical-scanning directional movement of the manuscript base underside.

[0018] In this configuration, the field which can be printed is displayed with a luminescence means to have two or more displays prepared in the main scanning direction of a manuscript base, and display means formed in the top face of a manuscript scan means movable in the direction of vertical scanning, such as a mark and LED. Therefore, a user can recognize exactly the field of a manuscript which can be printed by displaying the field which can be printed on a main scanning direction by luminescence of a luminescence means, making the edge of the field which can be printed move a manuscript scan means in the direction of vertical scanning, and displaying the field which can be printed with display means, such as a mark and LED.

[0019] (5) Said display means is characterized by including a luminescence means to have two or more displays prepared in the top face of a manuscript scan means in the main scanning direction.

[0020] In this configuration, a luminescence means to have two or more displays on the top face of a movable manuscript scan means is formed in a main scanning direction, the field of a main scanning direction which can be printed is displayed with a luminescence means, and the edge of the field which can be printed is made to move a manuscript scan means in the direction of vertical scanning in the direction of vertical scanning, and the field which can be printed is expressed in it as a luminescence means. Therefore, since the field of a main scanning direction and the direction of vertical scanning which can be printed can be displayed, the field which can be printed can be expressed to accuracy as a luminescence means to have two or more displays prepared in the top face of a manuscript scan means, suppressing the increment in components mark.

[0021] (6) Said luminescence means is characterized by being the light source which irradiates the reading light for reading the image of a manuscript.

[0022] In this configuration, the field which can be printed is displayed according to the light source which the light source which irradiates light is divided into the manuscript to two or more luminescence fields in case a manuscript is read, and has been prepared in the main scanning direction in the direction of vertical scanning at the movable manuscript scan means. Therefore, the field which can be printed is displayed on a main scanning direction by luminescence of the light source divided and established on the manuscript scan means, and the edge of the field which can be printed is made to move a manuscript scan means in the direction of vertical scanning, and the field which can be printed can be displayed on accuracy by displaying the field which can be printed by luminescence of the light source, suppressing the increment in components mark.

[0023]

[Embodiment of the Invention] Drawing 1 is the side elevation showing the example of a configuration of the outline of the image formation equipment which placed the image reader concerning the operation gestalt of this invention. Image formation equipment 41 consists of the scanner section 42 which is the image reader which reads images, such as a manuscript, the image formation section 43 which forms an image in a record form, the feed section 44 which feeds a record form to the image formation section 43. Each part is a thoroughly separable unit and the method with which image formation equipment 41 combines each unit is used.

[0024] It prevents that the scanner section 42 irradiates light in addition to manuscript 50 which the manuscript base 51 in which a manuscript 50 is laid, the copy lamp 53 which is the light source which irradiates light at a manuscript 50, and the copy lamp 53 laid in the manuscript base 51. The reflector 52 which converges the light of the copy lamp 53 on a manuscript 50, the 1st mirror 54 which reflects the reflected light from a manuscript 50, the 2nd mirror 55, the 3rd mirror 56, the optoelectric transducer that is the image pick-up means of the reflected light (CCD is called hereafter.) It is a configuration containing 57. Moreover, the 1st carriage 47 makes a reflector 52, the copy lamp 53, and the 1st mirror 54 constitute. Furthermore, the 2nd carriage 48 is constituted by the 2nd mirror 55 and the 3rd mirror 56.

[0025] The image formation section 43 The front face of the photo conductor drum 71 of a drum

configuration, and the photo conductor drum 71 The main electrification machine 72 and the electrostatic latent image which electrify predetermined potential The development counter 73 changed into a toner image, The laser scanning unit which irradiates the imprint machine 74 which imprints a toner image in the record form to which paper was fed from the feed section 44, the electric discharge machine 75 which discharges the front face of the photo conductor drum 71, the cleaning section 76 which collects remainder toners, and the modulation light by which the image processing was carried out at the photo conductor drum 71 (hereafter) LSU is called. It is a configuration containing 45.

[0026] LSU45 is constituted by semiconductor laser 61, the polygon mirror 62, the 1st f-theta lens 63, the 4th mirror 64, the 5th mirror 65, and the 2nd f-theta lens 66.

[0027] The feed section 44 is a configuration containing the paper output tray 80 which carries out the laminating of the sheet paper cassette 77 which contains a record form, the feed roller 78 which feeds a record form to the image formation section 43, the fixing assembly 46 which fixes a toner image to a record form, the delivery roller 79 which delivers paper to a record form, and the record form to which paper was delivered.

[0028] In drawing 1, the presswork of the image read in the scanner section 42 is explained. The 1st carriage 47 irradiates the light of the copy lamp 53 at the manuscript 50 laid in the manuscript base 51, moving in the direction of vertical scanning at the rate of predetermined. At this time, the 2nd carriage 48 moves in the direction of vertical scanning with the passing speed of the one half of the 1st carriage. The reflected light of the image from a manuscript 50 is received by CCD57 which is an image pick-up means through the 1st mirror 54 of the 1st carriage, and the 3rd 2nd mirror 55 and mirror 56 of the 2nd carriage. The light-receiving signal of CCD57 is supplied to semiconductor laser 61, after an image processing is made in the image-processing section outside drawing, and the modulation light corresponding to image information is irradiated by the front face of the photo conductor drum 71 through the polygon mirror 62, the 1st f-theta lens 63, the 4th mirror 64, the 5th mirror 65, and the 2nd f-theta lens 66 from semiconductor laser 61. The front face of the photo conductor drum 71 will be charged in predetermined potential with the main electrification vessel 72, and an electrostatic latent image will be supported by exposure of the light irradiated from the scanner section 42. After this electrostatic latent image is changed into a toner image with a development counter 73, it is the imprint machine 74 and is imprinted by the record form conveyed through the feed roller 78 from the sheet paper cassette 77. And a record form is fixed to a toner image by the fixing assembly 46, and a record form is discharged with the delivery roller 79, and carries out a laminating to a paper output tray 80. Moreover, the front face of the photo conductor drum 71 which ended the imprint process is discharged with the electric discharge vessel 75, and remainder toners are collected in the cleaning section 76.

[0029] Drawing 2 is the plan showing the example of a configuration of the outline of the image reader concerning this invention. Drawing 2 (A) The image reader shown in - (B) is put on the image formation equipment outside drawing, as shown in drawing 1. The manuscript base 1 of an image reader is a configuration containing LED9 which is two or more luminescence means arranged at the predetermined spacing to the manuscript installation field of the direction of vertical scanning of LED8 and the manuscript positioning member 3 which are two or more luminescence means arranged at the predetermined spacing to the field in which manuscript installation of the main scanning direction of the platen glass 2 which lays a manuscript, the manuscript positioning member 3, and the manuscript positioning member 3 is possible. the field in which a manuscript installation field can lay a manuscript in the manuscript base 1 -- it is -- platen glass 2 -- it is equal to the whole surface mostly. The scale 5 of a main scanning direction and the direction of vertical scanning in which the installation location of a manuscript is shown, and the center mark 6 which shows the main installation location of a manuscript are displayed on the manuscript positioning member 3. One side of the main scanning direction of platen glass 2 is called the datum line 7. Although the scale 5 shows the proper installation location of the paper size in the case of reading a manuscript by actual size, the display of the location in which a manuscript is laid according to the scale factor which he wishes at the time of variable power does not have it. It is because the locations in which a manuscript should be laid with a scale factor and a paper size, i.e., the field which can form an image on a form and which can be printed, differ at the time of

variable power.

[0030] In case the image reader shown in drawing 2 is used using a manual variable power function, the middle point of the main scanning direction of a manuscript is doubled with a center mark 6, and a manuscript is laid in the manuscript installation field of the manuscript base 1. The edge of a manuscript is made to contact the datum line 7 in the direction of vertical scanning of a manuscript, and a manuscript is laid in the manuscript installation field of the manuscript base 1.

[0031] A user inputs the scale factor of choice, and a record paper size into the control unit outside drawing. The control section outside drawing is computed according to the scale factor of choice and record paper size which were inputted into the control unit outside drawing, chooses LED which shows the edge of the field 11 among two or more LED 8-9 which can be printed, and displays the field 11 which can be printed. As the approach of a display, as shown in drawing 2 (A), there are an approach of displaying only the field 11 which can be printed, and the approach of displaying the field 11 which can be printed, and the printing margin 12, as shown in drawing 2 (B).

[0032] When displaying only the field 11 which can be printed, the control section outside drawing makes a main scanning direction turn on every one LED which shows the both ends of the field 11 which can be printed, respectively between two sides which a manuscript base adjoins as shown in drawing 2 (A). The datum-line side of the field 11 which can be printed makes one LED which shows a reverse edge turn on in the direction of vertical scanning. When displaying the field 11 which can be printed, and the printing margin 12, the control section outside drawing makes a main scanning direction turn on every one LED which shows the both ends of the field 11 which can be printed, respectively between two sides which a manuscript base adjoins, as shown in drawing 2 R> 2 (B), and makes one LED which measures from the datum line in the direction of vertical scanning, and shows the edge of the field 11 which can be printed turn on. And since the field of a printing margin becomes the perimeter of the field 11 which can be printed, a main scanning direction and the direction of vertical scanning make the outside of LED which shows each edge of the field 11 which can be printed turn on every one LED which shows the printing margin 12 at each edge, respectively.

[0033] Drawing 3 is the block diagram showing the configuration of the control section of the above-mentioned image reader. The I/O sections, such as the image pick-up section 30, a control unit 36, the LED actuation circuit 37, the carriage actuation circuit 38, an interface 34, and an image data memory 35, are connected to CPU31 equipped with ROM32 and RAM33. Two or more LED 8-9 is connected to the LED actuation circuit 37. The carriage drive motor 39 is connected to the carriage actuation circuit 38.

[0034] CPU31 carries out generalization control of each I/O section according to the program beforehand written in ROM32, and stores in the predetermined memory area of RAM33 the data outputted and inputted in the meantime. The image formation section is connected to an interface 34, and the reading data of the alphabetic character of a manuscript or an image outputted to the image formation section are inputted into it from CPU31. An image data memory 35 memorizes the reading data outputted through an interface 34. Based on the actuation data outputted from CPU31, the carriage actuation circuit 38 drives the carriage drive motor 39, and moves the 1st carriage outside drawing etc.

[0035] The flow chart of the manuscript reading and presswork of the image reader in the configuration of drawing 2 (A) is shown in drawing 4. First, when printing, a user performs sizing of the record form to print by the control unit 36 (s1). Next, the printing scale factor based on the size of the printing field of choice which is a predetermined field of a manuscript [a record form / a user] to make it print is set up by the control unit 36 (s2). CPU31 computes the field 11 in the manuscript installation field on the manuscript base 1 which can be printed from the record paper size and printing scale factor which were inputted. And CPU31 is energized in the LED actuation circuit 37, and displays the field 11 of a manuscript which can be printed. CPU31 turns on every one LED which shows the both ends of the main scanning direction of the field 11 among two or more LED8 arranged at the manuscript positioning member 3 which can be printed, respectively. Moreover, CPU31 turns on one LED a datum-line side indicates a reverse edge to be about the direction of vertical scanning of the field 11 which can be printed (s3). A user lays a manuscript in the manuscript base 1, and checks whether the close printing

field of choice is in the field 11 which was displayed by LED which shows each edge among two or more LED 8-9 and which can be printed (s4). When the printing field of choice is in [which can be printed] a field 11, a user pushes the start key of the control unit 36 which makes printing and manuscript reading serve a double purpose (s5). CPU31 performs reading of a manuscript (s6), and the image formation equipment connected to the image reader through the interface 34 prints in a record form based on the outputted image data. Then, presswork is ended when not performing the next printing.

[0036] A user checks whether the record paper size and printing scale factor by which current setting out is carried out are sufficient, when performing the next printing (s7, s9). When the present conditions are sufficient, a user lays a manuscript in the manuscript base 1, and performs actuation not more than s4. When reading on different conditions, setting out (s1) of a record paper size and setting out (s2) of a printing scale factor are reinputted to a control unit 36, and continued printing is performed. Moreover, in actuation of s4, when not going into the field 11 to which the printing field of choice was displayed by LED which shows each edge of the field which can be printed among two or more LED 8-9 and which can be printed, a user makes modification of a record paper size, or a change of a printing scale factor by the control unit 36 (s8). Then, a user lays a manuscript in the manuscript base 1 again, and judges whether the printing field of choice has agreed to the field 11 which can be printed (s4). If satisfactory, push (s5) and reading will be continued for the start key of a control unit 36 (s6).

[0037] Thus, by displaying selectively the field 11 which can be printed on the manuscript base 1 by two or more LED 8-9 based on a record form and a printing scale factor, or a user does extremely small printing to a record paper size, it becomes possible to carry out extremely large printing or to prevent the printing mistake with some missing images, and he can do printing [which a user wishes / of magnitude].

[0038] Another example of this invention is shown in drawing 5. The image reader shown in drawing 5 is a configuration containing the 1st carriage 15 which is the image scan means which can move in the direction of vertical scanning which set and prepared predetermined spacing in the underside of the manuscript base 1 and platen glass 2 freely. The manuscript base 1 is a configuration containing LED8 which is two or more luminescence means arranged at the predetermined spacing to the field 11 in which manuscript installation of the main scanning direction of the platen glass 2 which lays a manuscript, the manuscript positioning member 3, and the manuscript positioning member 3 is possible. The band-like mark 21 is formed in the top face of the 1st carriage 15. When the manuscript base 1 is seen from a top face, platen glass 2 is spaced and the top face and mark 21 of the 1st carriage 15 can be seen. The scale 5 in which the installation location of the main scanning direction of a manuscript and the direction of vertical scanning is shown, and the center mark 6 which shows the main installation location of a manuscript are displayed on the manuscript positioning member 3. One side by the side of the center mark 6 of platen glass 2 is called the datum line 7.

[0039] In drawing 5, the control section outside drawing switches on a main scanning direction one [at a time], and displays LED which shows the both ends of the field 11 which can be printed, respectively on it. The 1st carriage 15 is moved to the edge of the field which can be printed, and it displays in the direction of vertical scanning by the band-like mark 21 formed in the top face of the 1st carriage 15.

[0040] Another example of this invention is shown in drawing 6. The image reader shown in drawing 6 (A) is a configuration containing the 1st carriage 15 which is the image scan means which can move in the direction of vertical scanning which set and prepared predetermined spacing in the underside of the manuscript base 1 and platen glass 2 freely. The manuscript base 1 is a configuration containing the platen glass 2 which lays a manuscript, and the manuscript positioning member 3. LED25 which is two or more luminescence means arranged at the predetermined spacing to the field 11 in which manuscript installation of a main scanning direction is possible is installed in the top face of the 1st carriage 15. When the manuscript base 1 is seen from a top face, platen glass 2 is spaced and the top face and LED25 of the 1st carriage 15 can be seen. The scale 5 in which the installation location of the main scanning direction of a manuscript and the direction of vertical scanning is shown, and the center mark 6 which shows the main installation location of a manuscript are displayed on the manuscript positioning

member 3. One side by the side of the center mark 6 of platen glass 2 is called the datum line 7.

[0041] In drawing 6 (A), between two sides which a manuscript base adjoins, the control section outside drawing switches on a main scanning direction one [at a time], and displays LED25 which shows the both ends of the field 11 which can be printed, respectively on it. The 1st carriage 15 is moved to the edge of the field which can be printed, and it displays in the direction of vertical scanning by LED25 which installs in the top face of the 1st carriage 15, and displays the field of a main scanning direction which can be printed.

[0042] Since the configuration of the image reader shown in drawing 6 (B) is almost the same as drawing 6 (A), explanation of a configuration is omitted. Although the point of difference showed the field of a main scanning direction which can be printed by two or more LED26 prepared in the top face of the 1st carriage in drawing 6 (A), it is a point which uses LED for the light source 26 prepared in the 1st carriage which irradiates light, divides the light source 26 into two or more luminescence fields, and displays the field of a main scanning direction which can be printed on a manuscript in drawing 6 (B).

[0043] In drawing 6 (B), between two sides which a manuscript base adjoins, the control section outside drawing switches on a main scanning direction one [at a time], and displays on it LED26 for the light sources which shows the both ends of the field 11 which can be printed, respectively. The 1st carriage 15 is moved to the edge of the field which can be printed, and it displays in the direction of vertical scanning by LED25 which installs in the top face of the 1st carriage 15, and displays the field of a main scanning direction which can be printed. In this image reader, like drawing 6 (A), since it is not necessary to newly form luminescence means, such as two or more LED, in the 1st carriage 15, the manuscript installation field 11 which can be printed can be efficiently expressed on it as few components.

[0044] The flow chart of the manuscript reading and presswork of the image reader in the configuration of drawing 6 (A) is shown in drawing 7. In this image reader, since the configuration of the control section which controls reading of an image etc. is as the block diagram shown in drawing 3, explanation of the configuration of a control section is omitted.

[0045] A user performs sizing of the record form to print by the control unit 36, when printing (s10). Next, based on the size of the printing field of choice, a printing scale factor is set up by the control unit 36 (s11). At this time, CPU31 computes the field 11 in the manuscript installation field on the manuscript base 1 which can be printed from the record paper size and printing scale factor which were inputted. And CPU31 is energized in the carriage actuation circuit 38, drives the carriage drive motor 39, and moves the 1st carriage 15 which is a manuscript scan means to the edge of the direction of vertical scanning of the field 11 which can be printed (s12). And among two or more LED25 which energized in the LED actuation circuit 37 and has been arranged at the 1st carriage 15 in the field 11 which can be printed, one lights up at a time in a main scanning direction, and LED which shows the ends of the field 11 which can be printed, respectively is displayed on it (s13). The direction of vertical scanning of a manuscript shows the field which can be printed by LED25 which shows the field 11 of the main scanning direction installed on the 1st carriage which can be printed. A user lays a manuscript in the manuscript base 1, and checks whether close is in the field 11 to which the printing field of choice was displayed by LED25 and which can be printed (s14). When the printing field of choice is in the manuscript installation field 11, the start key of the control unit 36 which makes printing and manuscript reading serve a double purpose is pushed (s15). By having pushed the start key, it recognizes that the field 11 which can be printed decided CPU31, and the 1st carriage 15 is moved to the predetermined criteria location which performs a shading compensation required for an early arrangement location, i.e., manuscript reading, etc. (s16). Then, after performing the shading compensation for reading a manuscript etc., reading of a manuscript is performed (s17) and the image formation equipment connected through the interface 34 prints in a record form. Presswork is ended when not performing the next printing. In s14, when the close printing field of choice is not in the field 11 which LED25 displays and which can be printed, modification of a record paper size or a printing scale factor is changed, and it reinputs to a control unit 36 (s19). Then, it judges whether the manuscript was again laid in the manuscript base 1, and the printing field of choice has agreed to the field 11 which can be printed (s14).

Moreover, when there is the next printing, (s18) and a user judge whether the record paper size and printing scale factor by which current setting out is carried out are sufficient (s20). When the same conditions are sufficient, a user replaces a manuscript and judges whether the printing field of choice has agreed to the field 11 which can be printed (s14). When printing on different conditions, a user performs setting out (s10) of a record paper size, and setting out (s11) of a printing scale factor by the control unit 36, and continues presswork.

[0046] By performing such presswork, or a user does extremely small printing to a record paper size, it becomes possible to carry out extremely large printing or to prevent the printing mistake with some missing images, and he can do printing [which a user wishes / of magnitude].

[0047] By the above-mentioned explanation, although the manuscript installation approach of an image reader explained only how to lay doubling the middle point of the direction of vertical scanning of a manuscript with the support location of the center mark of a manuscript base, it has the approach of making the corner of a manuscript contact the corner which is the intersection of two sides when the main scanning direction of a manuscript installation field and the direction of vertical scanning adjoin each other, and laying in it as other manuscript installation approaches. In this case, since one corner of a manuscript is made to contact the corner 15 of a manuscript installation field to which it was directed by the corner mark 14 as shown in drawing 8 in case the field which can be printed is displayed, the control section outside drawing makes a main scanning direction turn on LED of the location which shows a corner and a reverse edge. Moreover, the control section outside drawing makes LED of the location which shows a corner and a reverse edge turn on in the direction of vertical scanning.

[0048] In addition, although LED of a luminescence means which has two or more displays used as a display means of the field which can be printed made only LED of an edge turn on in the above-mentioned example As shown in drawing 9 (A) - (B), as an option make two or more LED of a before [from one edge of the main scanning direction of the field which can be printed / the other end] turn on, or Two or more LED of a before [from the datum line of the direction of vertical scanning of the field which can be printed / the other end] is made to turn on, and there is an approach it is displayed that is easier to grasp to a user the field which can be printed.

[0049] Moreover, if what emits light by colors from which two colors differ, such as the 2 color LED, as a luminescence means which is a display means of the field which can be printed is used as shown in drawing 9 (B), the field which can be printed can be expressed as one color and can display a printing margin by other one color. By this approach, since it is displayed by the color from which the field which can be printed, and a printing margin differ, a user distinguishes clearly the field which can be printed, and the field of a printing margin, and can grasp them.

[0050] Furthermore, there is also the approach of making blink a luminescence means with a predetermined time interval, and displaying the field which can be printed. By this approach, since the visibility of LED improves, a user can recognize easily the field which can be printed.

[0051]

[Effect of the Invention] According to this invention, the following effectiveness is acquired.

(1) By having a means to display the field which can be printed on the manuscript installation field of the manuscript base of an image reader, or its perimeter The display by the display means can be seen and it can grasp easily in which field of an installation base a user should just lay a manuscript. Especially at the time of variable power Since the troublesome activity that a user judges a manuscript reading field like before becomes unnecessary, futility, such as trial printing, can be excluded and printing effectiveness improves.

[0052] (2) expressing the installation field which can be printed, and a printing margin as the display means formed in the manuscript installation field on a manuscript base, or its perimeter -- the exact range for printing on a record form -- in addition, since the information on the printing margin which is a margin can be known, manuscript reading can be performed, checking a printing layout.

[0053] (3) By displaying the field which can be printed with a luminescence means to have two or more displays prepared in the main scanning direction and the direction of vertical scanning of a manuscript base, a user can recognize exactly the field of a manuscript which can be printed by seeing luminescence

of a luminescence means.

[0054] (4) With a luminescence means to have two or more displays prepared in the top face of the main scanning direction of a manuscript base, and display means established in the direction of vertical scanning at the movable manuscript scan means, such as a mark and LED By displaying the field which can be printed, the field which can be printed is displayed on a main scanning direction by luminescence of a luminescence means. A user can recognize exactly the field of a manuscript which can be printed by making the edge of the field which can be printed move a manuscript scan means in the direction of vertical scanning, and displaying the field which can be printed with display means, such as a mark and LED.

[0055] (5) Establish a luminescence means to have two or more displays on the top face of a movable manuscript scan means in the direction of vertical scanning in a main scanning direction. By displaying the field of a main scanning direction which can be printed with a luminescence means, and making the edge of the field which can be printed move a manuscript scan means in the direction of vertical scanning, and displaying the field which can be printed with a luminescence means Since the field of a main scanning direction and the direction of vertical scanning which can be printed can be displayed, the installation field which can be printed can be expressed to accuracy as a luminescence means to have two or more displays prepared in the top face of a manuscript scan means, suppressing the increment in components mark.

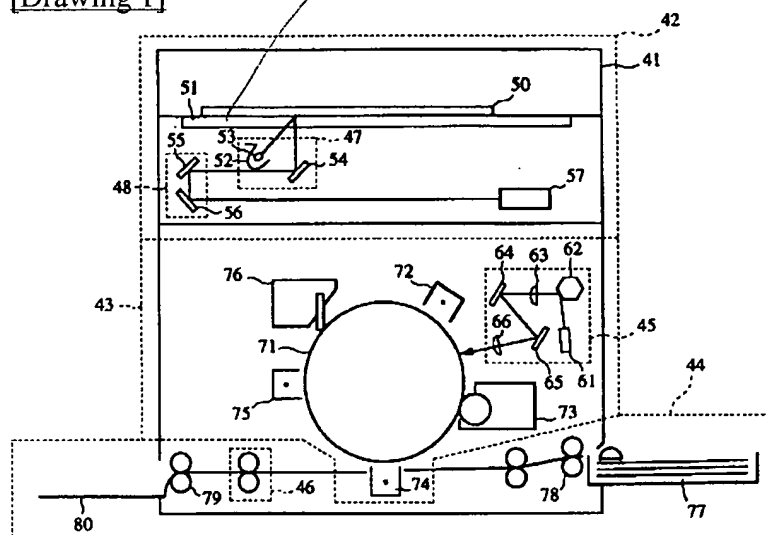
[0056] (6) By dividing into two or more luminescence fields the light source which irradiates light at a manuscript in case a manuscript is read, and displaying the field which can be printed on a movable manuscript scan means in the direction of vertical scanning according to the light source prepared in the main scanning direction By displaying the field which can be printed on a main scanning direction by luminescence of the light source divided and established on the manuscript scan means, and making the edge of the field which can be printed move a manuscript scan means in the direction of vertical scanning, and displaying the field which can be printed by luminescence of the light source The field which can be printed can be displayed on accuracy, suppressing the increment in components mark.

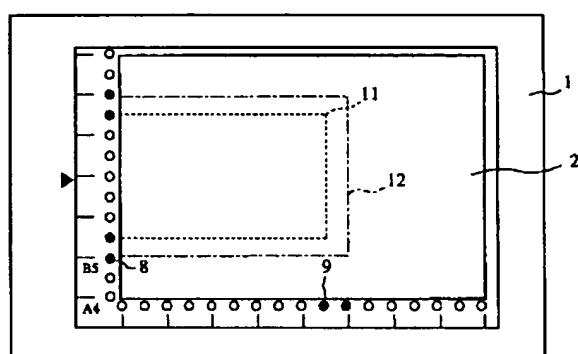
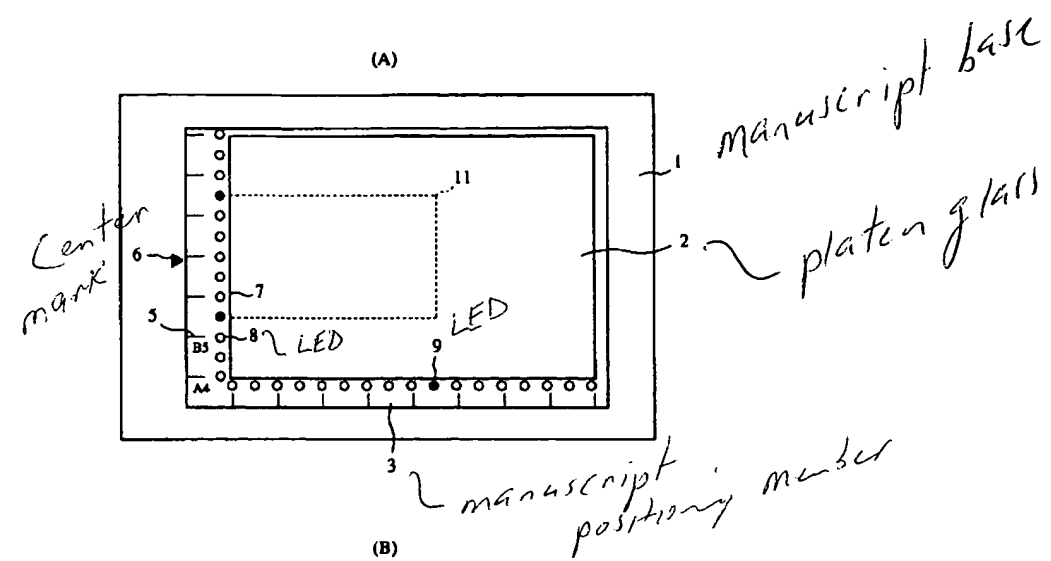
[Translation done.]

*** NOTICES ***

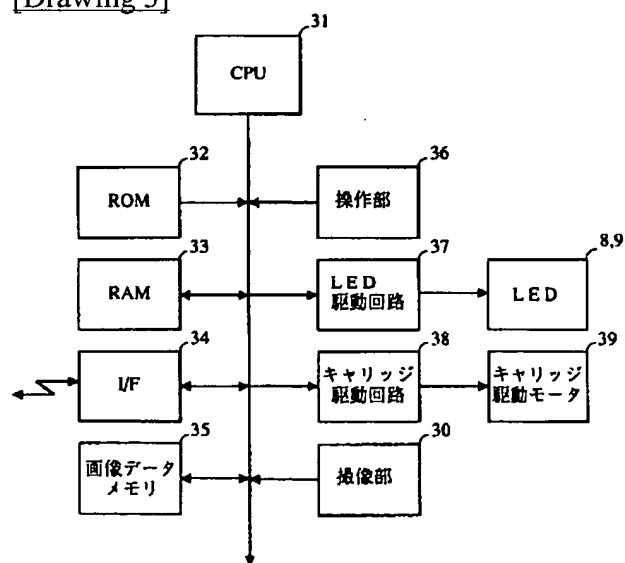
JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

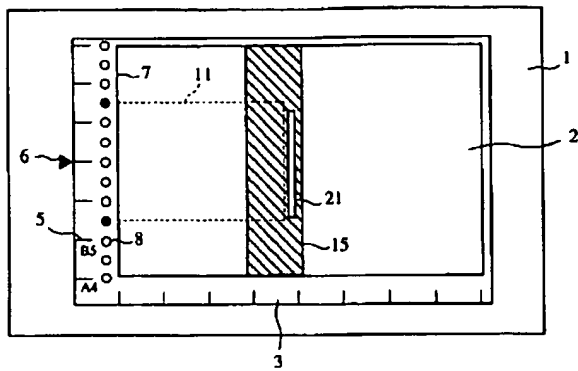
DRAWINGS*lamp***[Drawing 1]****[Drawing 2]**



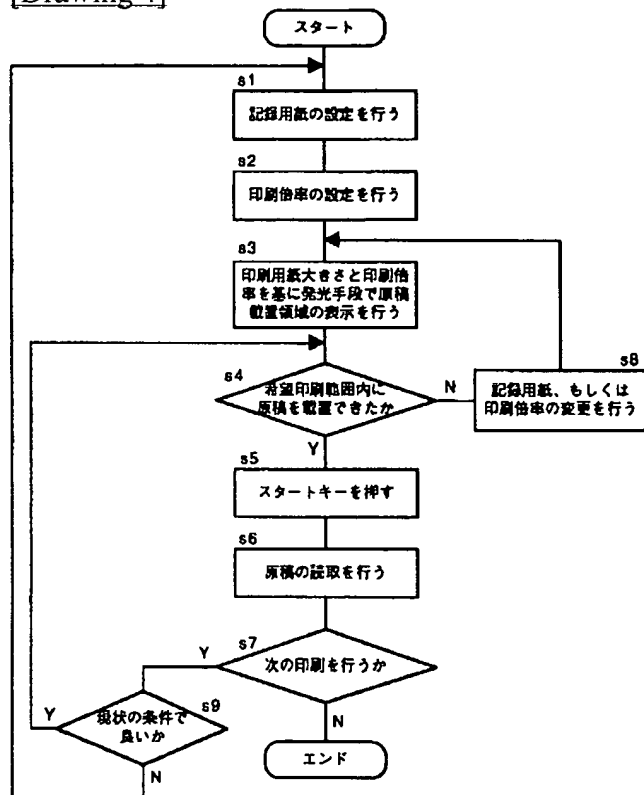
[Drawing 3]



[Drawing 5]

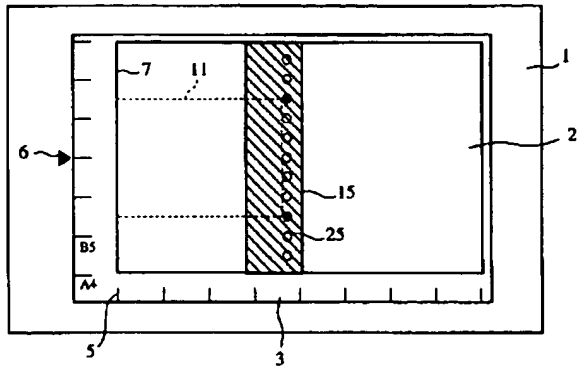


[Drawing 4]

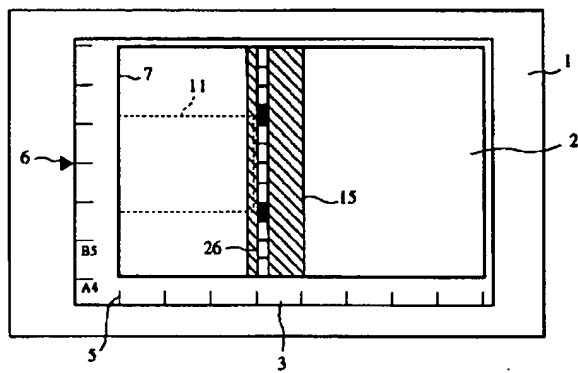


[Drawing 6]

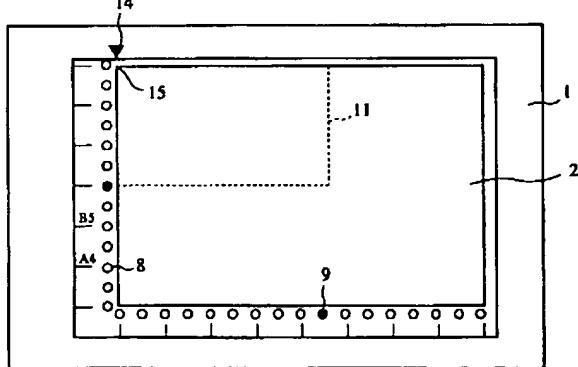
(A)



(B)

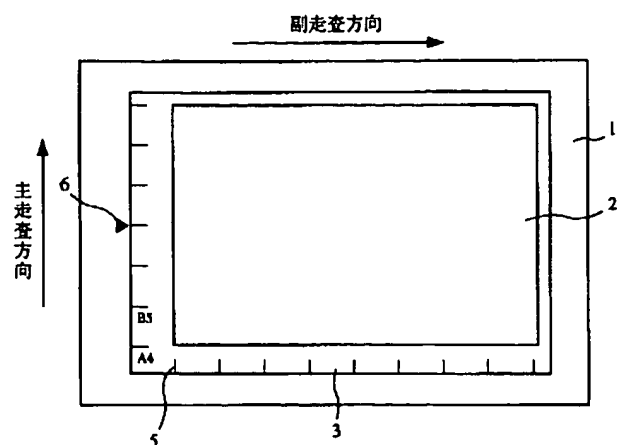


[Drawing 8]

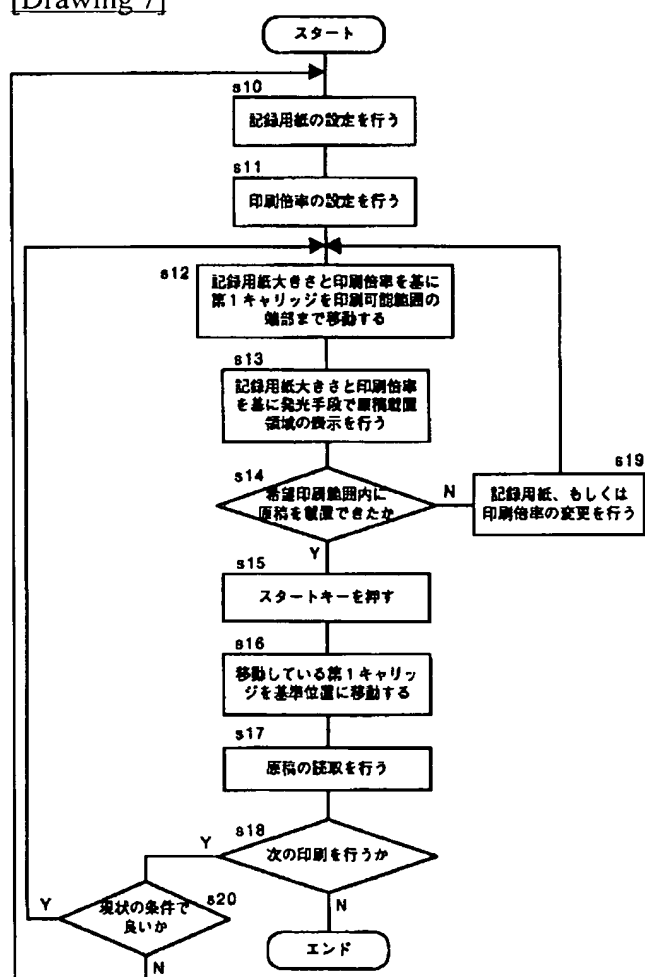


[Drawing 10]



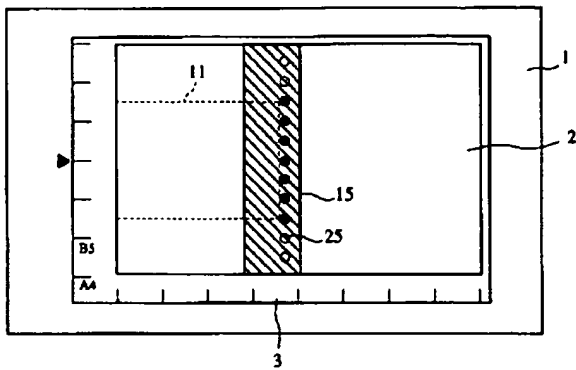


[Drawing 7]

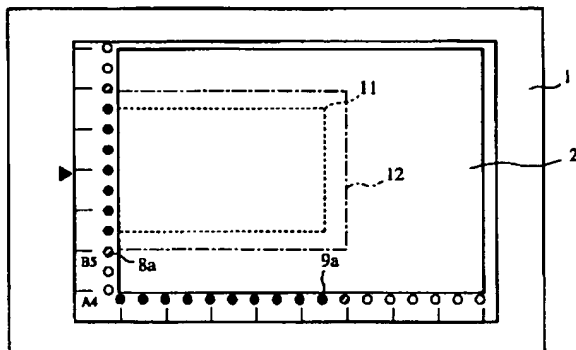


[Drawing 9]

(A)



(B)



[Translation done.]